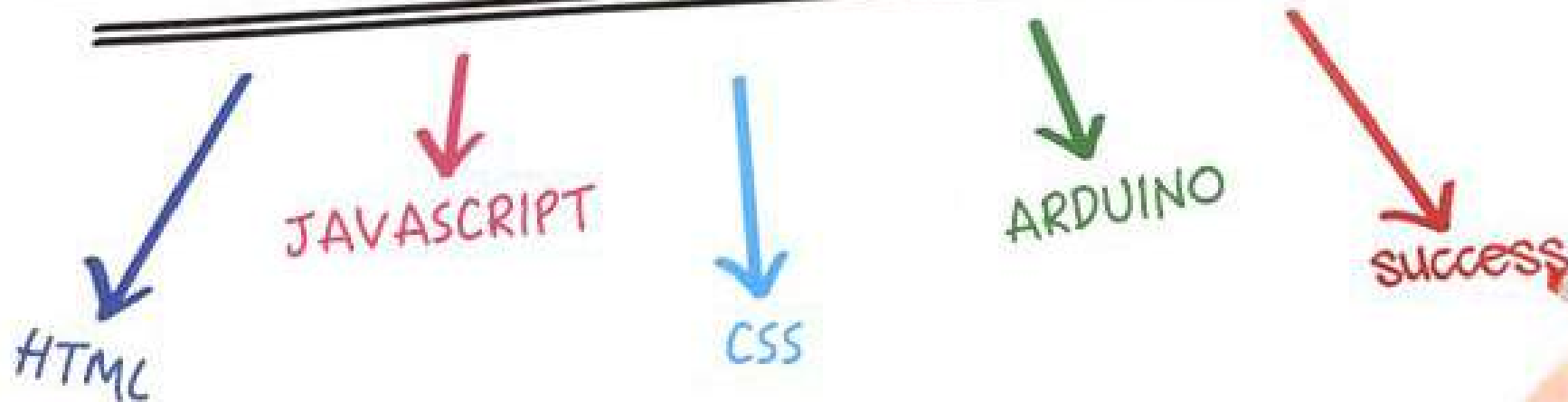


the power of

WEBDUINO

iot





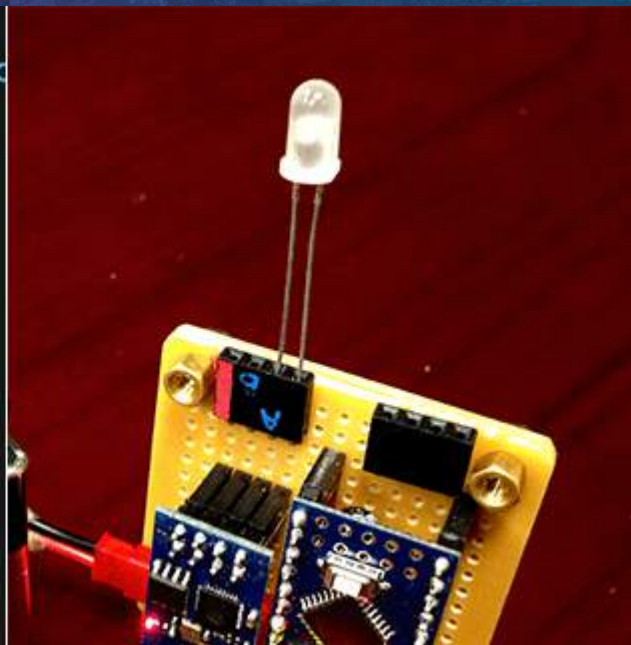
**使用Arduino
從來沒有如此簡單過...**

插電就是 IoT !!!

用HTML/JS控制 Arduino

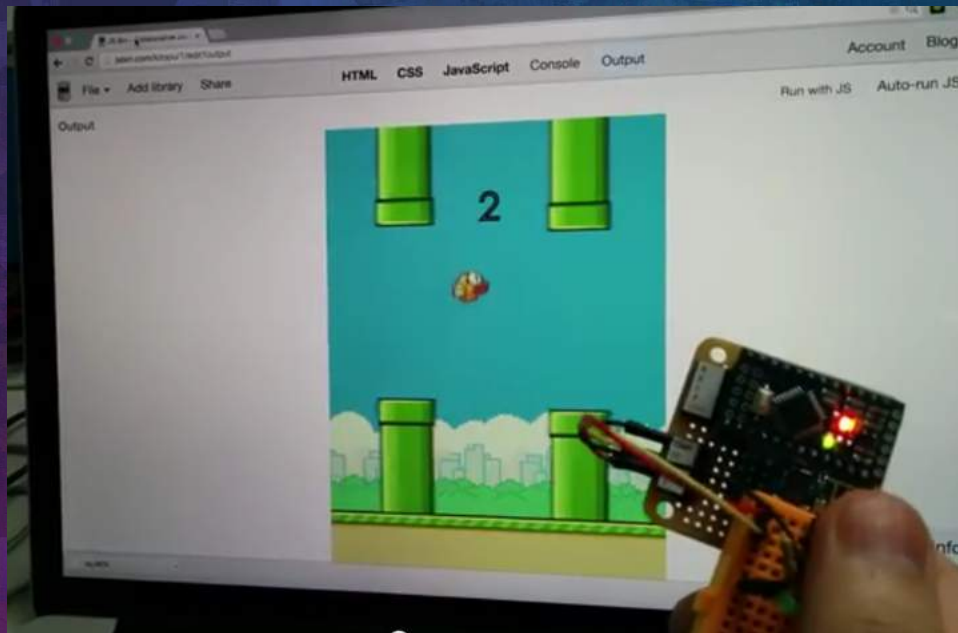
直接用JavaScript控制LED

```
5   <title>Webduino LED</title>
6   <link rel="import" href="http://webduino.io/c
7   </link>
8   </head>
9   <body>
10    <web-arduino id='board'>
11      <wa-led id='led' pin='10'></wa-led>
12    </web-arduino>
13
14    <script>
15      board.on('ready', function() {
16        |
17      });
18    </script>
19  </body>
20  </html>
```



用JS事件監聽實體按鈕

```
var btn =  
    document.getElementById('button');  
  
btn.on('pressed', function() {  
    led.on();  
});
```

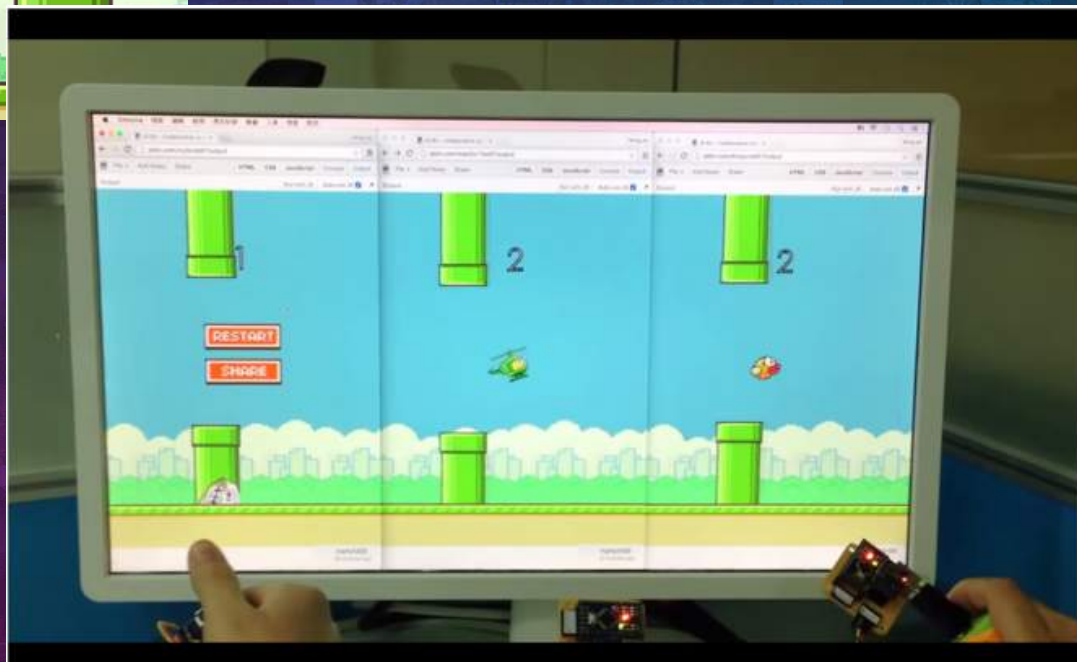


WEBDUINO + FLAPPY BIRD

2015/5/13 19:30~21:30

輕鬆整合既有網頁遊戲

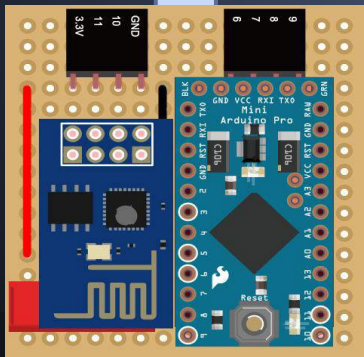
多人同時即時互動



Internet



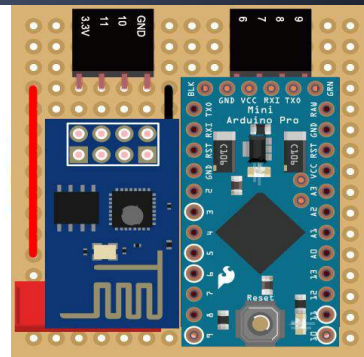
小威須透過
WiFi分享器上網



Internet

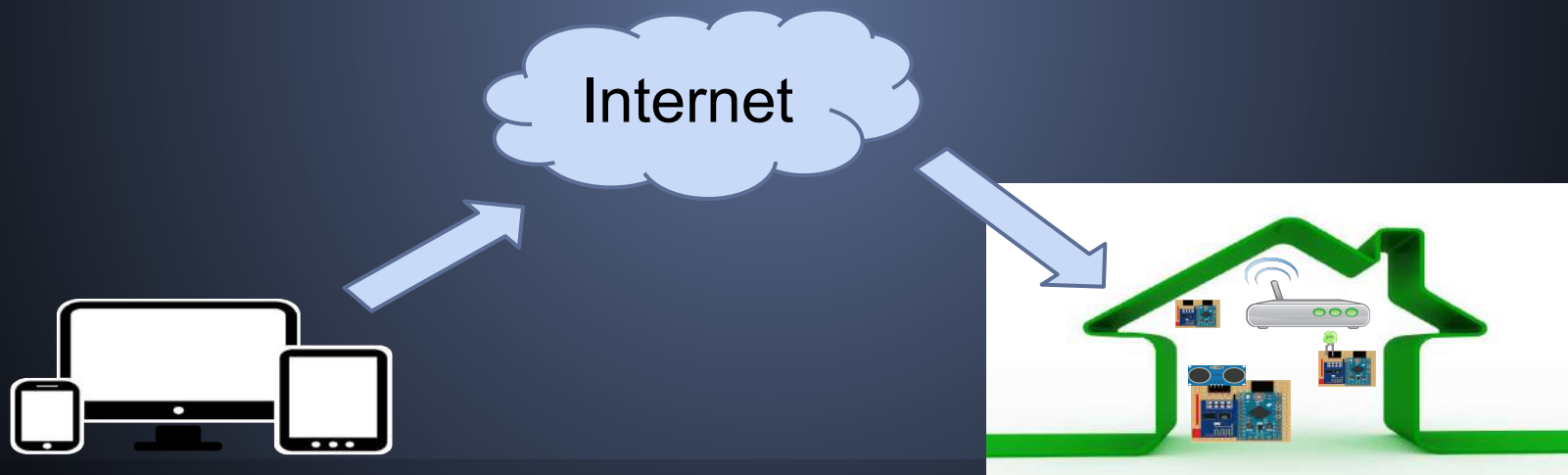


或透過手機分享
WiFi上網



程式架構

1. 用WebComponent 整合 Breakout
2. 用WebSocket (Firmata) 和後端Server交互
3. 後端Server走TCP/IP (Firmata) 控制 Webduino



Arduino Firmata

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[Reference](#) [Language](#) | [Libraries](#) | [Comparison](#) | [Changes](#)

[Firmata](#) - [Library](#) - [Baud Rate Details](#) - [Protocol Details](#) - [Protocol Proposals](#)

Firmata Library

The Firmata library implements the Firmata protocol for communicating with software on the host computer. This allows you to write custom firmware without having to create your own protocol and objects for the programming environment that you are using.

Methods

```
begin(); //start the library
begin(long); //start the library and override the default baud rate
printVersion(); //send the protocol version to the host computer
blinkVersion(); //blink the protocol version on pin 13
printFirmwareVersion(); //send the firmware name and version to the host computer
setFirmwareVersion(byte major, byte minor); //set the firmware name and version, using the sketch's filename, minus the
''.pde''
```

用 HTML/JS 控制 Arduino, 玩轉 IoT

Webduino = WebComponents + Arduino



<http://fb.me/webduino>



<http://webcomponents.org/>



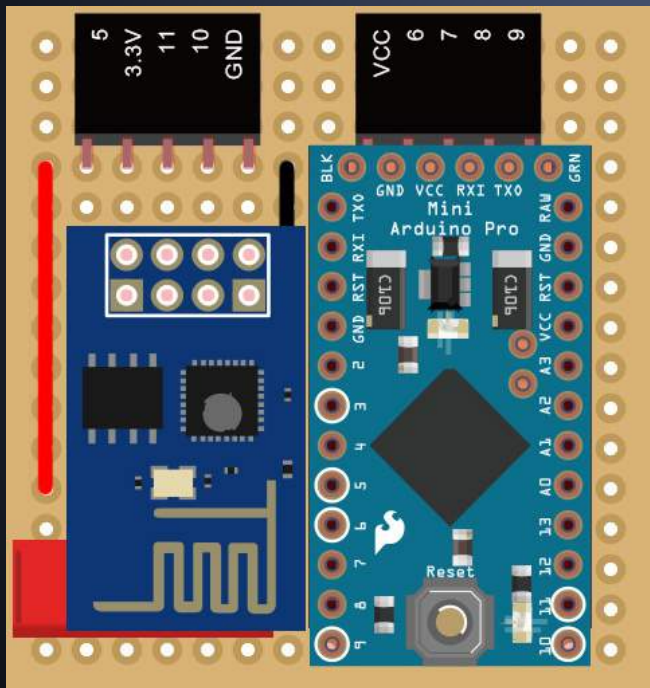
<http://arduino.cc>

Webduino 與 Arduino 的差異



比較項目	Arduino	Webduino
開發語言	C / C++	HTML / JavaScript
開發環境	Arduino IDE	瀏覽器 / ...
連接方式	USB	WiFi
更新程式	連接燒錄	立即更新

開發版的HTML寫法

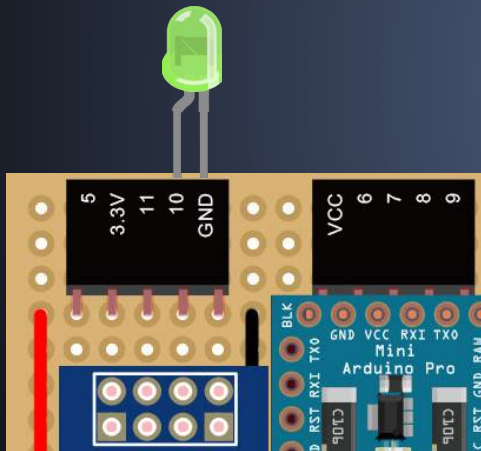


識別碼

`<web-arduino device="????">`

`</web-arduino>`

Web Components - 組裝元件



`<web-arduino device="MNW?">`

`<wa-led pin='10'></wa-led>`

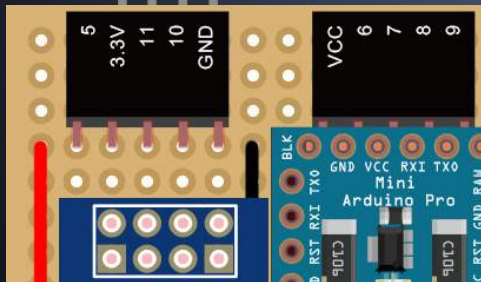
`</web-arduino>`

Web Components - 組裝元件



```
<web-arduino device="MNW?">
```

```
<wa-ultrasonic trig="11" echo="10">  
</wa-ultrasonic>
```



```
</web-arduino>
```

HTML需引入js、arduino元件

```
<head>  
  //Web Components http://webcomponents.org/  
  <script src="http://webduino.io/components/webcomponentsjs/webcomponents.js"></script>  
  //Arduino板子  
  <link rel='import' href='http://webduino.io/components/webduino/web-arduino.html'></link>  
  
</head>
```


目前元件清單

// 按鈕

```
<link rel='import' href='http://webduino.io/components/webduino/wa-button.html'></link>
```

// LED

```
<link rel='import' href='http://webduino.io/components/webduino/wa-led.html'></link>
```

// 3色全彩LED

```
<link rel='import' href='http://webduino.io/components/webduino/wa-rgbled.html'></link>
```

// 伺服馬達元件

```
<link rel='import' href='http://webduino.io/components/webduino/wa-servo.html'></link>
```

// 超音波元件

```
<link rel='import' href='http://webduino.io/components/webduino/wa-ultrasonic.html'></link>
```

目前元件清單

// 人體紅外線

```
<link rel='import' href='http://webduino.io/components/webduino/wa-pir.html'></link>
```

// 水銀傾斜開關

```
<link rel='import' href='http://webduino.io/components/webduino/wa-mercury.html'></link>
```

// 振動開關

```
<link rel='import' href='http://webduino.io/components/webduino/wa-shock.html'></link>
```

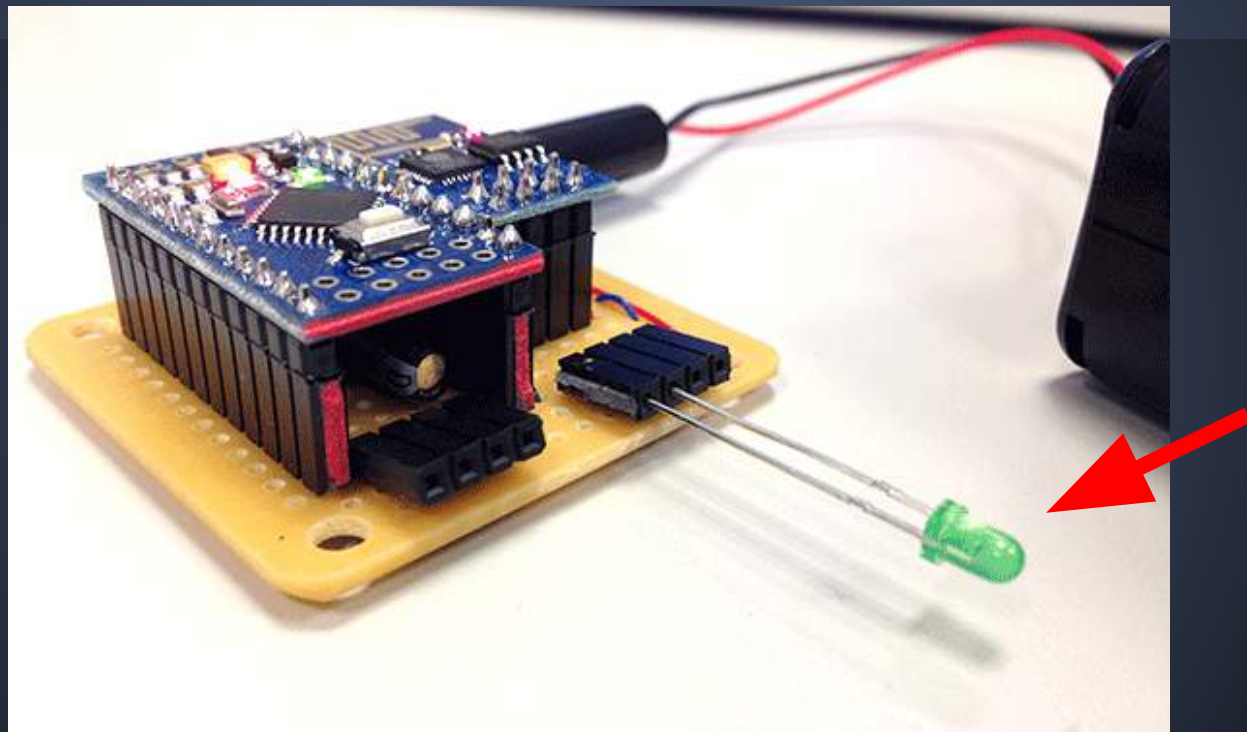
// 溫濕度感測

```
<link rel='import' href='http://webduino.io/components/webduino/wa-dht11.html'></link>
```

// 步進馬達

```
<link rel='import' href='http://webduino.io/components/webduino/wa-stepper.html'></link>
```

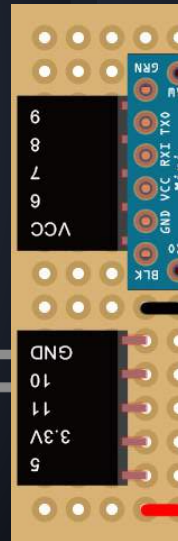
點亮 LED 燈



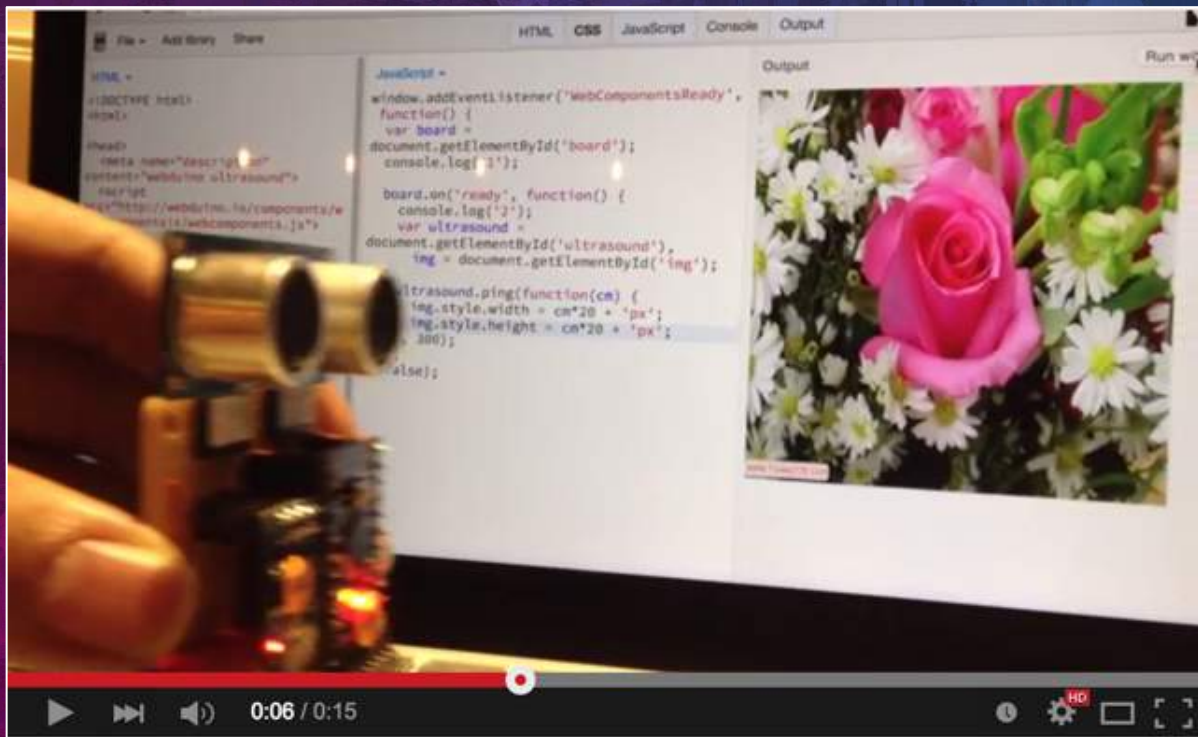
HTML控制LED寫法

HTML

```
<html>
  <head>
    <script src="http://webduino.io/components/webcomponentsjs/webcomponents.js"
  ></script>
    <link rel='import' href='http://webduino.io/components/webduino/web-arduino.
html'></link>
    <link rel='import' href='http://webduino.io/components/webduino/wa-led.
html'></link>
  </head>
  <body>
    <web-arduino id='board' device='MNW?'>
      <wa-led id='led' pin='10' state='on'></wa-led>
    </web-arduino>
    <h1>LED On</h1>
  </body>
</html>
```



超音波縮放圖片



HTML Code



超音波縮放圖片

HTML

```
<html>
<head>
  ...略...
</head>
<body>
  <web-arduino id='board' device='reJx'>
    <wa-ultrasonic id='ultrasonic' trig='11' echo='10'></wa-ultrasonic>
  </web-arduino>
  <img id='img' src='http://www.hua.com/flower_picture/meiguihua/images/r17.jpg'></img>
</body>
</html>
```

CSS

```
#img {
  width: 200px;
  transition:.3s;
}
```

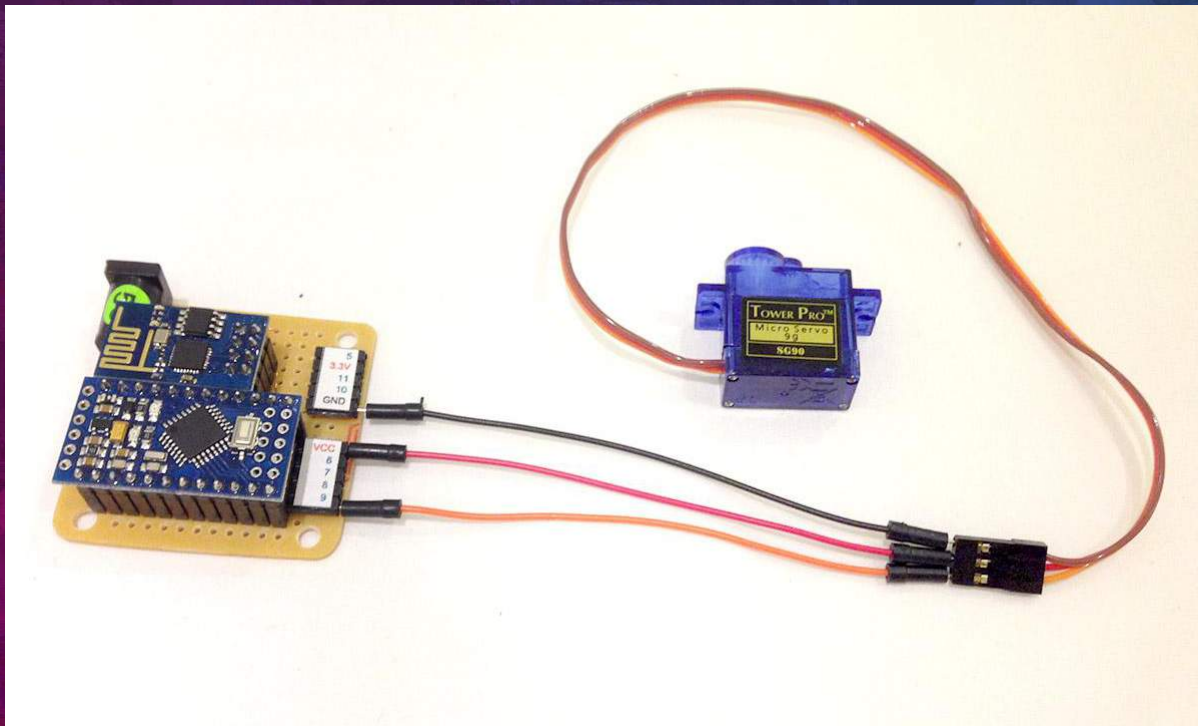
JavaScript

```
window.addEventListener('WebComponentsReady', function() {
  var board = document.getElementById('board');

  board.on('ready', function() {
    var ultrasonic = document.getElementById('ultrasonic'),
        img = document.getElementById('img');

    ultrasonic.ping(function(cm) {
      img.style.width = cm*20 + 'px';
      img.style.height = cm*20 + 'px';
    }, 300);
  });
}, false);
```

控制伺服馬達



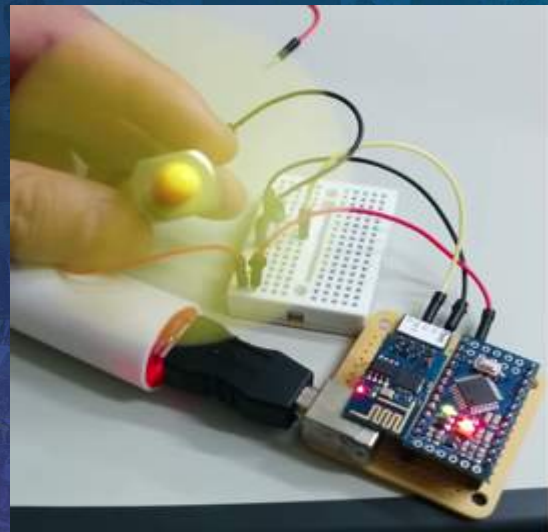
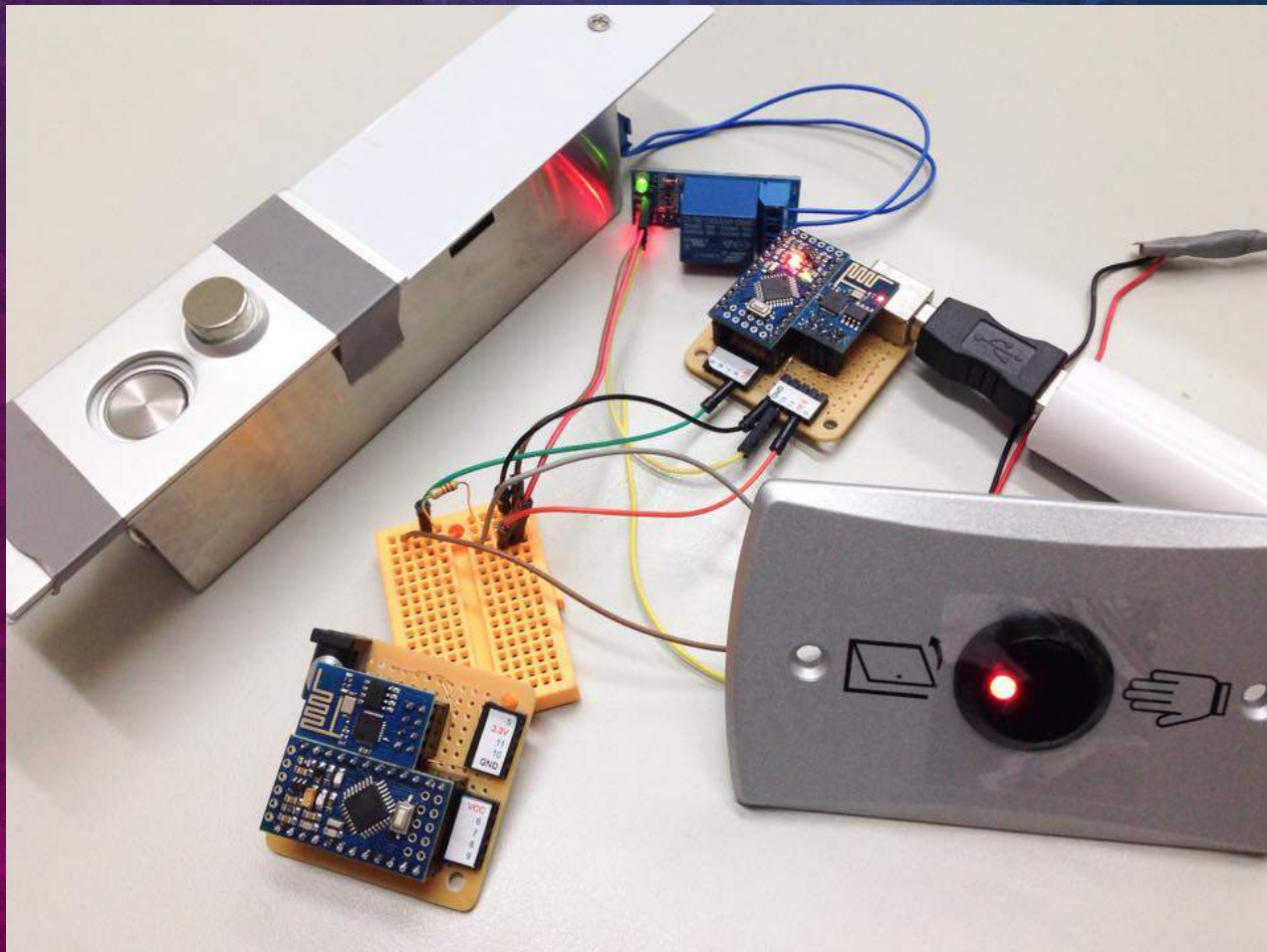
[HTML Code](#)




```
<!DOCTYPE html>
<html>

<head>
  <meta name="description" content="webduino ultrasound">
  <title>UltraSound Alert</title>
  <script src="http://webduino.io/components/webcomponentsjs/webcomponents.js"></script>
  <link rel='import' href='http://webduino.io/components/webduino/web-arduino.
html'></link>
  <link rel='import' href='http://webduino.io/components/webduino/wa-servo.html'></link>
</head>

<body>
  <web-arduino id='board' device='MND0'>
    <wa-servo id='servo' pin='9' angle='10'></wa-servo>
  </web-arduino>
</body>
</html>
```



謝謝聆聽